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Work engagement: a practical measure for workplace health promotion?

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SUMMARY

*The objectives of this study were to investigate whether psychological job demands, personal control and social support affect the negative health measure of depression differently than the positive measure of work engagement and to investigate whether work engagement mediates the effects of job demands and resources on the level of depression. We discuss the implications of using engagement as an outcome measure in workplace health promotion. We performed a cross-sectional questionnaire study among a general working population in Norway (*n = *605). In the multivariate analysis, high psychological job demands as well as high control and social support correlated significantly with high work engagement. High demands as well as low control and social support correlated significantly with high levels of depression. When we included engagement as an independent variable together with demands, control and social support in the multivariate analysis, the positive correlation between demands and depression remained as well as the significant correlations between the level of depression and control and social support became non-significant. This indicates that engagement mediates the effects of control and social support on the level of depression. Encouraging enterprises to improve engagement in addition to focusing on preventing diseases may be worthwhile in workplace health promotion. Promoting engagement may have more positive organizational effects than a more traditional disease prevention focus, because engagement is contagious and closely related to good work performance and motivation*

Key words: depression; psychosocial; mediation; work performance

INTRODUCTION

The most important guidelines for health promotion emphasize the need to focus on factors beyond the immediate causes of diseases such as empowerment, supportive environments and participation (WHO, 1986; Mittelmark *et al*., 2007). Nevertheless, most health-related research has focused on reducing risk factors and preventing illness and disease (Myers, 2000; Hanson, 2007; Schaufeli and Salanova, 2007), often with an individual's perspective aiming at changing individuals' health-related behaviour or lifestyle in private life or at work (Noblet and LaMontagne, 2006; Torp *et al*., 2011). Therefore, there has been a call for research defining health as something else than the absence of disease, such as well-being, quality of life, mastery and engagement (Antonovsky, 1987b; Seligman and Csikszentmihalyi, 2000) and for research investigating whether other factors than factors predicting disease determine such positive health measures (Schaufeli and Salanova, 2007).

Within occupational health research, both the demands–control–support model (Karasek and Theorell, 1990) and the job demands–resources model (Bakker and Demerouti, 2007) suggest that two distinct pathways are important for work-related health: one pathogenic process, leading to exhaustion, burnout and disease; and another salutogenic process, leading to positive outcomes such as mastery, learning, proactive behaviour, good performance and health. In these models, high job demands are regarded as the main risk factor for disease, but the demands may also be a factor resulting in positive outcomes if combined with favourable job resources such as autonomy and social support (Karasek and Theorell, 1990; Hakanen and Roodt, 2010). Despite the hypothesis regarding dual processes, both the demands–control–support model and the job demands–resources model maintain that the two processes are related, and that the positive outcomes affect the negative ones and vice versa. A key measure in the job demands–resources model is work engagement, often defined as a positive, fulfilling, work-related state of mind characterized by vigour, dedication and absorption (Schaufeli and Bakker, 2010). In the salutogenic or motivational process of the job demands–resources model, work engagement mediates the effects of job resources on well-being and behavioural and organizational outcomes. Only a handful of studies have investigated relationships between work engagement and disease (Bakker and Leiter, 2010a).

In health promotion theory, a setting is recognized as a complex social and cultural environment that can enhance or damage people's health (Chu *et al*., 2000; Poland *et al*., 2000; Paton *et al*., 2005; Dooris, 2006). The Sundsvall Statement on Supportive Environments for Health (WHO, 1991) and the Luxembourg Declaration on Workplace Health Promotion (European Network for Workplace Health Promotion, 2005) therefore advocate settings approaches (Torp *et al*., 2011) for health promotion and emphasize subsequently the importance of modifying the setting itself rather than solely attempting to change individuals' behaviour. In the workplace, this implies systems thinking and sustained organizational development. Understanding how environmental and organizational factors at work may influence both pathogenic and salutogenic processes, and how these processes interact is important. Work engagement may be an important mediating factor in both processes and thus be a useful measure for promoting spiral relationships (Karasek, 1998; Salanova *et al*., 2010), resulting in healthy workers and sustainable organizations.

The objectives of this study were therefore to investigate:

- whether job demands, control and social support correlate differently with work engagement, a positive measure of health, than with the level of depression, a negative health measure; and
- whether work engagement mediates the possible effects of psychosocial work factors on the level of depression.

MATERIAL AND METHODS

The participants in this cross-sectional questionnaire study served originally as a control group in a study investigating work engagement among 852 employed people with cancer (Gudbergsson *et al*., 2008). For that study, Statistics Norway drew 777 female and 771 male ($n = 1548$) matched controls to the people with cancer on age, sex and place of dwelling. A total of 700 responded with valid questionnaires, and 605 of these had full-time or part-time work. The present study included all these respondents. Because of regulations on anonymity decided by the Norwegian Data Inspectorate, we sent no reminder, thereby precluding an attrition analysis of non-respondents.

Measures

Table 1 presents all items and scales included in this study with their descriptive data.

The Demands–Control–Support Questionnaire (Landsbergis *et al*., 2000; Theorell, 2000; Sanne *et al*., 2005) was used to measure the three psychosocial work dimensions. According to Karasek & Theorell (Karasek and Theorell, 1990), control comprises two related but theoretically distinct constructs: the worker's authority to make decisions on the job (decision authority) and the breadth of skills the worker uses on the job (skill discretion). As Karasek & Theorell (Karasek and Theorell, 1990) recommend, we combined the two different constructs in one measure. The demands and control questions had a four-point response scale from 'Yes, often' (=1) to 'No, almost never' (=4), and the social support statements had a four-

Table 1: Outline of indexes and items

Index	No. of items	Mean	SD	Range	Reliability (Cronbach's alpha)	Items included
Psychological job demands	5	2.57	0.52	1.20–4.00	0.72	Work very fast Work very hard Job requires excessive effort Sufficient time for all work tasks Conflicting demands
Control	6	2.93	0.50	1.33–4.00	0.71	Opportunity to learn new things at work Job require creativity Doing the same tasks over and over again Possibility to decide how to carry out your work Possibility to decide what should be done
Social support	6	3.32	0.41	1.83–4.00	0.83	Calm atmosphere at the workplace Team spirit Support from colleagues Colleagues understand if I have a bad day Support from supervisors Likeable colleagues
Work engagement	17	5.65	1.04	1.88–7.00	0.93	
Vigour	6	5.86	0.96	1.83–7.00	0.81	Feel bursting with energy at work Feel strong and vigorous at work Feel like going to work when getting up in the morning Can continue to work for long periods Mentally resilient at work Always persevere at work
Dedication	5	6.07	1.08	1.00–7.00	0.88	Meaningful work Enthusiastic about work Inspiring work Proud of my work Challenging job
Absorption	6	5.10	1.40	1.00–7.00	0.87	Time flies at work Forget everything else around me when working Feel happy when working intensely Immersed in my work Get carried away when working Difficulty with detaching from work
Level of depression	7	1.40	0.41	1.00–3.29	0.79	Enjoy things I used to do Can laugh and see funny sides of things Feel cheerful Feel slowed down Lost interest in my appearance Look forward to enjoying things Can enjoy a good book or TV programme

point response scale ranging from 'Agree' (=1) to 'Do not agree at all' (=4).

To measure work engagement, we used the Utrecht Work Engagement Scale (Schaufeli and Bakker, 2010). This is a 17-item scale that contains three subscales: vigour (six items), dedication (five items) and absorption (six items). All items had a seven-point response scale from 0 (never) to 6 (always). As Schaufeli & Bakker (Schaufeli and Bakker, 2010) recommend, we used the composite measure containing all the 17 items in this study as the main measure but also present the results for the three subscales.

Depression was measured by using the hospital anxiety and depression scale (HADS; Mykletun *et al*., 2001; Bjelland *et al*., 2002). The HADS was designed for measuring anxiety and depression among patients with somatic symptoms but has also been used in several studies of non-hospital patients. The HADS is a 14-item scale measuring levels of anxiety and depression. In this study, we used only the depression subscale, which includes seven items with a response scale ranging from 1 to 4. It was not used to identify workers with a diagnosis of depression but solely to measure the level of depression.

We also included age (years), sex and education. Education was measured with primary school (<10 years), secondary school (9–12 years), lower university level (13–16 years) and higher university level (>13 years).

Statistics

For all the multiple item variables, we constructed indexes by summing the scores and dividing the sum by the number of items included. Items were recoded so that a higher total score of the included indexes indicates higher levels of job demands, control, social support, work engagement and depression. We performed Pearson's correlation analysis to test bivariate correlations between background variables and psychosocial work factors (Table 2). We used bivariate and multivariate linear regression analysis to investigate the relationships between the psychosocial work factors and work engagement and depression (Table 3). We tested moderation (interaction) effects between psychosocial work

Table 2: Pearson correlations among independent variables ($n = 532–605$)

	1	2	3	4	5
1. Sex (0 = male, 1 = female)					
2. Age	−0.33***				
3. Education	−0.10*	0.12**			
4. Psychological job demands	−0.04	0.07	0.02		
5. Control	−0.13**	0.06	0.35***	0.03	
6. Social support	0.00	0.05	−0.01	−0.23***	0.35***

*$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$.

Table 3: Linear regression analysis measuring relationships between psychosocial work factors and work engagement ($n = 532–592$)[a]

	Work engagement		Vigour		Dedication		Absorption	
	Model 0[b]	Model 1[c]	Model 0[b]	Model 1[c]	Model 0[b]	Model 1[c]	Model 0[b]	Model 1[c]
Psychological demands	0.00	0.08*	−0.04	0.03	−0.04	0.03	0.05	0.12**
Control	0.48***	0.36***	0.37***	0.25***	0.48***	0.37***	0.40***	0.29***
Social support	0.43***	0.32***	0.41***	0.32***	0.42***	0.29***	0.36***	0.29***
Adjusted R^2		0.30		0.22		0.29		0.22

[a]All entries are standardized β coefficients. [b]Bivariate. [c]Multivariate regression coefficients adjusted for the effects of the other variables included in the regression model.
*$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$.

factors and engagement by including cross-products of engagement and demands, control and support in multiple regression analysis.

One aim of this study was to test whether work engagement mediated the effect of the working environment on the level of depression. A variable may be defined as a mediator if it accounts for the relationship between an independent and a dependent variable (Baron and Kenny, 1986). In this case, there must be a significant bivariate correlation between the independent variable and both the dependent variable and the presumed mediator. In addition, the mediator must correlate significantly with the independent variable. According to Baron and Kenny (Baron and Kenny, 1986), perfect mediation applies if the effect of the independent variable on the dependent variable is reduced to non-significance when controlled for the effect of the mediator. We tested the mediating effects of work engagement on the level of depression by using regression analysis, the Sobel test and bootstrapping (Hayes, 2009).

In multiple regression analysis, controlling for the effects of sociodemographic variables is common. We did not include these variables in our analysis because they have no theoretical relevance for the mechanisms being studied. Using as simple models as possible is also recommended when investigating mediation effects (Baron and Kenny, 1986). Statistical significance was set at 0.05, and the SPSS 16.0 computer package was used for the statistical analysis.

Ethics

The Norwegian Data Inspectorate and the Southern Norway Regional Committee for Medical and Health Research Ethics approved the study. By returning the questionnaire, the participants gave written informed consent.

RESULTS

Forty-six per cent of the respondents were male, the average age was 51 years (SD = 8.7, range = 31–69) and 10% had primary school, 46% had secondary school, 34% had lower university education and 10% had higher university education. Table 1 shows that the job demands mean score was 2.57 (SD = 0.50), and the mean scores of perceived control and social support were 2.93 (SD = 0.59) and 3.32 (SD = 0.41). The mean work engagement score was 5.65 (SD = 1.04) and 1.40 (SD = 0.41) for the depression score. The internal reliability of the indexes, measured by using Cronbach's alpha, ranged from 0.71 (control) to 0.93 (work engagement).

Table 2 shows that the background variables correlated weakly with most of the psychosocial work factors, except that more highly educated workers reported higher control than less highly educated workers. Social support correlated significantly and negatively with demands and positively with control. Men reported a significantly lower level of depression than women ($r = -0.12$) and more highly educated workers a significantly lower level than less highly educated workers ($r = -0.18$). No background variables correlated significantly with work engagement (data not shown).

Table 3 shows bivariate and multivariate analysis investigating the effects of psychosocial work factors on work engagement and level of depression. The resource measures control and social support correlated significantly with work engagement in both the bivariate (model 0) and the multivariate (model 1) analysis. Bivariately, psychological job demands did not correlate significantly with work engagement, but this changed to a significant positive relationship when controlled for the effects of the other two independent variables (model 1). All the non-significant bivariate correlations between demands and the three subscales changed positively when controlling for the effects of social support and control, but the only correlation reaching statistical significance was between demands and absorption (Table 3). Demands, control and social support explained 31% of the variance in work engagement.

Bivariately, workers with high demands, low control and low support reported significantly higher levels of depression than workers with low psychological job demands, high control and high support (Table 4, model 0). These significant relationships remained in the multivariate analysis (model 1).

Engagement correlated significantly and negatively with the level of depression (Table 4, model 0). The preconditions for testing the mediating effects of engagement on depression were therefore present (Baron and Kenny,

Table 4: Linear regression analysis measuring relationships between psychosocial work factors, work engagement and level of depression ($n = 532–592$)[a]

	Model 0[b]	Model 1[c]	Model 2[c]	Model 3[c]	Model 4[c]	Model 5[c]
Psychological job demands	0.16***	0.13**	0.14**	0.14***	0.13**	0.13**
Control	−0.20***	−0.16***	−0.10	−0.10*	−0.09	−0.15**
Social support	−0.24***	−0.15***	−0.06	−0.03	−0.09	−0.11*
Work engagement	−0.31***		−0.26***			
Vigour	−0.38***			−0.36***		
Dedication	−0.28***				−0.23***	
Absorption	−0.21***					−0.13**
Adjusted R^2		0.09	0.15	0.19	0.13	0.10

[a]All entries are standardized β coefficients. [b]Bivariate. [c]Multivariate regression coefficients adjusted for the effects of the other variables included in the regression model.
*$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$.

1986). When we included work engagement in the multiple regression model as an independent variable (Table 4, model 2), the significant relationship between the level of depression and demands was retained, and the significant relationships between depression and control and social support were reduced to non-significance. This indicates that work engagement mediates the effects of the job resources control and social support on the level of depression but not psychological job demands. The full model (model 2) with engagement included explained 15% of the variance in the workers' reported level of depression. The Sobel test showed that work engagement significantly ($p < 0.001$) mediated the effects of both control and social support on the level of depression. Using bootstrapping (Hayes, 2009), we confirmed the significant mediating effects of engagement with bias-corrected and accelerated 95% confidence intervals of −0.16 to −0.06 for control and −0.14 to −0.04 for social support. Both the Sobel test and the bootstrapping analysis confirmed that work engagement did not mediate the effect of demands on the level of depression.

We tested whether there were any moderation effects by including the cross-products of engagement and demands, control and social support in regression models, but none of these three cross-products was significantly correlated with the level of depression (data not shown). Table 4 shows that vigour is the subscale that contributes the most to the significant relationship between engagement and the level of depression and that absorption contributes the least.

DISCUSSION

This questionnaire study in a general working population showed that the job resources control and social support correlated positively with work engagement and negatively with the level of depression. Job demands correlated positively with depression with about the same strength of the correlation as the two resources but did not negatively affect on engagement. When the effects of resources were controlled for, workers with higher demands were more engaged than workers with lower demands. Work engagement correlated negatively with depression and seemed to mediate the effects of the job resources on depression, but not the effects of demands.

As the job demands–resources model proposes and as other studies have shown (Hakanen *et al.*, 2006; Llorens *et al.*, 2006; Bakker *et al.*, 2011), both control and social support correlated significantly with engagement in this study. The bivariate analysis showed a zero correlation between demands and engagement, supporting the hypothesis that resources primarily predict engagement. Nevertheless, demands correlated positively and significantly with engagement in the multivariate analysis, indicating that workers experiencing high demands are more engaged than workers with low demands when the effects of control and social support are controlled for. This lends support to the active learning hypothesis of the demands–control–support model (Karasek and Theorell, 1990) and also to later descriptions of the job demands–resources model (Hakanen and Roodt, 2010). Of the three subscales of engagement, absorption was the

scale that contributed the most to this result. Further, Mauno *et al.* (Mauno *et al.*, 2007) found that absorption was the factor of the three engagement subscales correlating most highly with demands.

Numerous studies have shown that high demands, low control and low social support are associated with mental health problems (Nieuwenhuijsen *et al.*, 2010; Stansfeld and Candy, 2006), but many studies show significant effects of only two of the independent variables when controlling for the effects of each other. Our study confirms the importance of all three psychosocial work factors, because they all correlated significantly with the level of depression. As the resources correlated just as highly as or slightly more highly than the level of depression as demands did, low levels of resources seem to be of equal importance for the energy-tapping process leading to disease and ill health.

In accordance with some other studies (Hallberg and Schaufeli, 2006; Peterson *et al.*, 2008), engagement correlated negatively with the level of depression. In addition to the significant main effects of demands, resources and engagement, our results also indicate that engagement mediates the effects of job resources on depression. The mediating effects of engagement are rather well documented on positive outcomes such as organizational commitment (Hakanen *et al.*, 2006; Richardsen *et al.*, 2006), proactive behaviour (Salanova and Schaufeli, 2008), customer loyalty (Salanova *et al.*, 2005) and organizational citizen behaviour (Saks, 2006). Far fewer studies have investigated and documented the mediating effects on depression.

Vigour and dedication were the two subscales correlating most highly with the level of depression. Parker *et al.* (Parker *et al.*, 2010) showed similar results, but the correlations in that study were lower than the correlations in our study. Vigour and dedication are regarded as opposites of the two core symptoms of burnout: exhaustion and cynicism (Gonzalez-Roma *et al.*, 2006; Schaufeli and Bakker, 2010). It has been suggested that absorption may be an effect of engagement rather than one of its components (Salanova *et al.*, 2003; Bakker *et al.*, 2011).

Can work engagement be a practical measure for workplace health promotion?

Work engagement has positive organizational effects such as increased customer loyalty (Salanova *et al.*, 2005) and increased commitment and reduced turnover intentions (Schaufeli and Bakker, 2004; Hakanen *et al.*, 2006). One can expect such factors to have positive economic effects for enterprises (Harter *et al.*, 2002). In addition, work engagement may also have positive effects for individuals by increasing efficacy beliefs (Llorens *et al.*, 2007; Salanova *et al.*, 2011), proactive behaviour (Salanova and Schaufeli, 2008) and happiness (Vella-Brodrick *et al.*, 2009).

Positive measures such as coping, self-efficacy, happiness and engagement are closely entwined and have reciprocal effects. They are all important aspects of health in a holistic definition (Nordenfelt, 1993) and in a lay understanding of health (Fugelli and Ingstad, 2001). We therefore maintain that work engagement is an inherently important work-related health measure that should be promoted among workers. As engagement also seems to mediate the effects of job resources on the level of depression, encouraging enterprises to improve engagement for preventing mental health problems seems worthwhile as well.

Because health can hardly be detached from the setting in which the health is created (WHO, 1986), it is important that personnel responsible for workplace health promotion such as health and safety personnel and occupational health services collaborate with stakeholders primarily concerned with the economic and organizational outcomes of enterprises. In this collaboration, work engagement may be a measure that can bridge the current gap between health promoters and human resource management, economists and managers of enterprises.

Methodological limitations and strengths

An important limitation is that firm conclusions regarding causal relationships cannot be drawn because of the cross-sectional design. Another limitation is that all measures are self-reported, which may overestimate the investigated relationships because of common-method variance (Conway, 2002). Nevertheless, the theoretical approach of this study is based on well-established theories on work, engagement and health (Karasek and Theorell, 1990; Bakker and Leiter, 2010b), and the results are in accordance with these.

The participants of this study served as a matched control group for cancer survivors. Therefore, they are not representative for workers in Norway. This may have influenced the prevalence estimates and mean scores but should not be of importance for the relative relationships investigated here. A response rate of 46% may be of greater negative importance. Nevertheless, a large population-based health study in Norway investigating differences between respondents and non-respondents demonstrated modest differences only in prevalence estimates and sociodemographic distribution, and the relationships between independent and dependent variables were similar (Søgaard *et al*., 2004).

It has been found that job-specific questions may give more consistent findings in testing the demands–control–support model than the general questions used in this study (Sparks and Cooper, 1999; McClenahan *et al*., 2007). Although demands, control or empowerment and supportive environments cover basic needs for human beings, including other factors such as organizational justice (Elovainio *et al*., 2001), meaningful work (Antonovsky, 1987a; Ravn, 2008) and possibilities for learning and development (van Veldhoven *et al*., 2005) would probably increase the explained variance of the model. The importance of various predictors will probably differ between settings and between specific groups of workers.

Conclusions

This population-based questionnaire study confirms key hypotheses in both the demands–control–support model and the job demands–resources model, as it shows that both the level of depression and work engagement are related to demands, control and social support. Work engagement also seems to mediate the effects of the job resources on depression but not the effects of demands. In workplace health promotion, it may be worthwhile to encourage enterprises to initiate salutogenic processes by improving work engagement and health in addition to solely focusing on preventing diseases. A focus on engagement may have additional positive organizational effects to more traditional preventive activities, because engagement is contagious and closely related to motivation and good work performance. Both descriptive and intervention studies exploring effects of engagement on disease and health in different work settings are needed.

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